REMARKS

The present invention is a method of self-monitoring operation of a proximity sensor, a lightguide system and a device including a proximity sensor. A method of self-monitoring the operation of a proximity sensor with reference to the disclosed embodiments involves at least one transmitter 2, a receiver 10 and first and second lightguides 4 and 8. The first lightguide has a surface through which the first light beam is transmitted to exit the first lightguide. The method includes producing a beam in the at least one transmitter 2; transmitting the beam into the first lightguide 4 as represented by beam 20 therein in Fig. 4; splitting the beam into a first beam 28 and a second beam by the action of prism 7 within the lightguide occurs before the first beam is transmitted through the surface to exit the first lightguide. The second beam is directed diagonally to the right in the lightguide 4 of Fig.4 and is transmitted into the second lightguide 8 via beam 22. Prism 9 in the second lightguide 8 directs the second beam 24 towards the receiver 10. The receiver 10 receives and analyzes the second beam to determine operation of the proximity sensor.

The present invention solves the problems of the prior art. The light beam of the present invention is divided within the first lightguide of Figs. 4-7 and split into a first beam and second beam as the result of a reflector surface 7 as illustrated in Fig. 4, a curved surface in Fig. 5 on which beam 20 is incident, and surface 9a in Figs. 6 and 7.

The aforementioned splitting within the first lightguide prior to transmission through a surface of the first lightguide through which the first beam exits the surface

of the first lightguide eliminates the problems of the prior art which are consequent from the reflective prisms or bumps which are functionally separate from to the lightguide (even though being formed integral therewith). The problems of the prior art are the result of the aforementioned functionally distinct prisms and bumps which are eliminated by splitting the beam into first and second beams within the lightguide 4 with the second beam not being subject to the degrading which characterizes the prior art.

Claims 16-28 stand rejected under 35 U.S.C. §102 as being anticipated by United States Patent 6,087,653 (Van Schyndel et al). This ground of rejection is traversed for the following reasons.

Independent claim 16 recites "[a] method of self-monitoring operation of a proximity sensor comprising at least a transmitter, a receiver, and first and second lightguides, including the steps of: ... transmitting the beam into the first lightguide with the first lightguide having a surface through which a first beam is transmitted to exit the first lightguide before the first beam is transmitted through the surface of the first lightguide to exit the first lightguide..."; claim 19 recites "[a] lightguide system for use with a proximity sensor comprising: a first lightguide which directs a first beam into a first predefined direction with the first lightguide having a surface through which a first light beam is transmitted to exit the first lightguide;...a beam splitter within the first lightguide which splits an incident beam into the first beam and into the second beam before the first beam is transmitted through the surface of the first lightguide to exit the first lightguide..."; claim 24 recites "[a] proximity sensor, comprising: a transmitter comprising a first lightguide which directs a first beam into a first predefined direction and which includes a surface through which the first beam

is transmitted to exit the first lightguide; ...a beam splitter within the first lightguide which splits an incident beam into the first beam and into a second beam before the first beam is transmitted through the surface of the first lightguide to exit the first lightguide..."; and claim 25 recites, "[a] device including a proximity sensor comprising: a transmitter including a first lightguide which directs a first beam into a first predefined direction and which includes a surface through which the first beam is transmitted to exit the first lightguide; ...a beam splitter within the first lightguide which splits an incident beam into the first beam and into a second beam before the first beam is transmitted through the surface of the first lightguide to exit the first lightguide...". This subject matter has no counterpart in Van Schyndel et al.

Van Schyndel et al teach that bumps 35 form small lenses. The bumps transmit some of the light upwardly from the upper plane surface toward a reflecting object and some of the light entering the interior of the bumps 15 is scattered sideways. See column 4, lines 36-47. However, each of the independent claims recites substantively that the splitting of the beam into the first beam and into the second beam occurs before the first beam is transmitted through the surface of the first lightguide to exit the first lightguide. This recitation excludes the bumps 35 from being the claimed beam splitter.

Column 4 of Van Schyndel et al, teach "[l]ight such as infrared radiation from LED 29 is thus passed into the adjacent end of lightguide 19, is guided up the lightguide 19 by internal reflection, emanates from its top surface." The Examiner has construed the bumps 35 as being the beam splitter which cannot be read upon the disclosed function of the bumps 35. The function of the claimed beam splitter excludes the outer surface of the bumps 35 from being construed to be the beam

splitter in that the claimed beam splitting occurs before the first beam exits the surface of the first lightguide.

Moreover, there is no basis why a person of ordinary skill in the art would be led to modify the teachings of Van Schyndel et al to arrive at the subject matter of independent claims 16, 19, 24 and 25 without impermissible hindsight.

Moreover, the dependent claims define more specific aspects of the independent claims which are not anticipated nor rendered obvious by Van Schyndel et al.

To the extent necessary, Applicants petition for an extension of time under 37 C.F.R. §1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (1123.40855X00) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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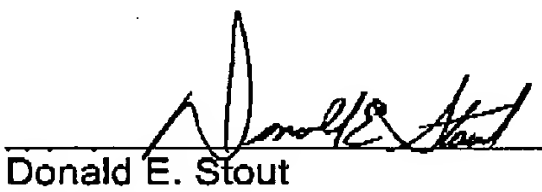

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